RE-EXAMINING CROWDFUNDING SUCCESS: HOW THE CROWDFUNDING GOAL MODERATES THE RELATIONSHIP OF SUCCESS FACTORS AND CROWDFUNDING PERFORMANCE

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Abstract

The factors determining the success of crowdfunding projects is one of the central issues for crowdfunding researchers. Quantitative approaches recognise the number of funds targeted as an important control variable. However, little is known about the impact of the funding goal on other factors that impact crowdfunding success. We hypothesise that the effect of crowdfunding success factors varies contingent on the funding goal level. A dataset of 338 crowdfunding projects from the largest German crowdfunding platform StartNext in the years 2015 to 2016 is analysed by conducting regression analyses controlling for varying funding goal sizes. We use the dependent variables success, the degree of success and the number of project supporters and control whether the effect of independent variables such as comments, updates and social media depend on different funding goals. Our study indicates that the impact of the investigated success factors, in fact, strongly depends on the funding goal levels of crowdfunding projects. By grouping projects into clusters of varying funding goals, we find that the impact of individual success factors changes and that the funding goal plays a moderating role for factors impacting project success.

Implications for Central European audience: Many crowdfunding studies focus on the most popular US-based platforms like Kickstarter or Indiegogo. We examined projects on the largest German reward-based crowdfunding platform StartNext. These results help both researchers and future entrepreneurs in Europe to better understand supporter behaviour. We suggest that future entrepreneurs should be aware that factors influencing the success of a crowdfunding project strongly depend on the set funding goal, which should be adequately considered in future crowdfunding research.

Keywords: crowdfunding; success factors; reward-based; start-up; entrepreneurial financing
JEL Classification: M13, L26, G24

Introduction

The right choice among the numerous opportunities for financing new businesses is central to the development of ideas by nascent entrepreneurs. Thereby, entrepreneurs with competencies in acquiring external funding are positively related to venture growth (Brinckmann et al., 2011). While traditional financing forms such as bank loans or funding by venture capitalists are well-established, crowdfunding emerged as a new opportunity to finance innovative ideas on new products, services or technologies (Giudici et al., 2012). In particular reward-based crowdfunding seems to have disrupted the traditional ways of raising funds for a project idea since the people who provide financial resources (*funders*, *backers* or *supporters*) do not expect any financial returns from their investment (Belleflamme et al., 2015). Rather, the funders, for instance, can pre-order a new product or receive other non-monetary rewards such as merchandise or being personally acknowledged by the project initiators (Mollick, 2014). In other words, reward-based crowdfunding refers to financing 'a project or a venture by a group of individuals instead of professional parties' (Schwienbacher & Larralde, 2010, p. 4) who in turn receive 'some form of reward' (Mollick, 2014, p. 2). For initiators of crowdfunding projects, this means that the acquired financial resources through reward-based crowdfunding, in fact, equals debt- and equity-free money (Datta et al., 2018); thus new ventures can be eventually be created without losing ownership.

Reward-based crowdfunding platforms such as Kickstarter or Indiegogo offer a variety of instruments to promote crowdfunding initiatives, for example, the integration of social media platforms, embedding promotional and illustrative videos from YouTube, and the possibility to interact with the crowd through updates or comments on individual projects (Fernandez-Blanco et al., 2020; Greenberg et al., 2013; Mollick, 2014). In this context, crowdfunding platforms act as two-sided markets, connecting project founders to a potential crowd that can provide the required funding (Belleflamme et al., 2014; Belleflamme et al., 2015). The central questions for both entrepreneurs and researchers in this context is how to design a crowdfunding project and which factors hereby determine the success of a crowdfunding initiative (Bernardino & Santos, 2020; Datta et al., 2018; Janku & Kucerova, 2018; McKenny et al., 2017; Short et al., 2017; Xiao et al., 2014).

Considering crowdfunding success, the funding goal determines the amount of funding from the crowd required for a project to be considered successful and can be set by the project founders. Some crowdfunding platforms allow the project founders to keep all the pledged money, even if a previously defined funding goal was not reached, using the so-called 'keep-it-all' principle (Bi et al., 2019). In the 'all-or-nothing' principle of reward-based crowdfunding, the project founders, however, only receive the pledged money if the funding goal was reached during the crowdfunding campaign; otherwise, the funding is paid back to the crowd (Bi et al., 2019). The all-or-nothing principle is, therefore, considered a signal of the commitment of the project founders (Cumming et al., 2019). Factors that impact the probability of reaching the funding goal are called 'success factors', which are central to crowdfunding research and have been largely investigated (Beier & Wagner, 2015; Cordova et al., 2015; Kromidha & Robson, 2016; Kuppuswamy & Bayus, 2018; Parhankangas & Renko, 2017). Thereby, especially the funding goal set by the project founders was identified to be a central factor impacting project success, with an increasing funding target having a negative impact on the success probability (Cordova et al., 2015; Frydrych et al., 2014; Koch

& Siering, 2015). For nascent entrepreneurs, a successful crowdfunding campaign can serve as a positive signal to venture capitalists for funding rounds in the future (Roma et al., 2018; Thies et al., 2018), such that successful crowdfunding can provide project founders with a substantial head-start for potentially scaling their business after the crowdfunding campaign.

Therefore, the project founder must carefully set the funding goal before launching a crowdfunding campaign. It is a conflicting decision to set a realistic funding goal that considers both the need for sufficient resources to implement the crowdfunding project upon potential crowdfunding success and the negative relationship between an increasing funding goal level and success probability (Ullah & Zhou, 2020). However, the question of whether and how the impact of individual success factors varies for projects with different funding goals has often been neglected. Therefore, this study seeks to answer the guiding question of whether success factors are moderated by the level of the funding goal and contingent on the answer to this question of how the impact of success factors eventually varies for different levels of the targeted funding goal.

We apply an empirical approach to assess the potential moderating role of the funding goal on the relationship between success factors established by previous research and crowdfunding performance in terms of success and the number of attracted supporters. In view of the signalling theory (Spence, 1973, 2002), which is increasingly used in recent crowdfunding research (Short et al., 2017), we investigate the effect that the funding goal may have in the reward-based crowdfunding setting. A quantitative approach is considered most appropriate for this purpose since many scholars have been investigating success factors in the past, such that general relationships between success factors and crowdfunding performance have already been established by statistical means. However, we particularly emphasise that the funding goal as a fundamental decision to be taken by any project founder may moderate these relationships and that the impact of individual success factors varies contingent on the funding goal level. The findings are particularly helpful for future entrepreneurs who consider crowdfunding an option to finance their ideas. This study can provide guidance in terms of which instruments become more relevant if the targeted funding goal is either low or high. The data used in this study comprises 338 crowdfunding projects from the largest German reward-based crowdfunding platforms, StartNext, which applies the 'all-or-nothing' principle.

1 Theoretical background

1.1 Application of signalling theory in the crowdfunding environment

The notion of the signalling theory established by Spence (1973, 2002) finds great acceptance in crowdfunding research (Davies & Giovannetti, 2018; Kunz et al., 2017; Scheaf et al., 2018; Song et al., 2020; Summers et al., 2016). The signalling theory assumes a signalling environment in which a signaller sends a signal to a receiver, who then interprets the signal and sends feedback to the signaller (Connelly et al., 2011). In a crowdfunding setting, the founding project team of a crowdfunding campaign acts as the signaller. The founding team must convince the crowd (the receiver) to support their project by sending specific signals, whereby the crowd's decision to support a project reflects the feedback given to the signaller. Since crowdfunding often aims at financing an early stage of a project, little tangible evidence can be provided to the crowd (Kim et al., 2016). Due to the underlying

information asymmetry between a project team and the crowd, the project team must send signals informing about the quality of the project to the crowd such that their credibility can be assessed (Kim et al., 2016), which can finally result in the decision of the crowd to support a project.

Crowdfunding platforms provide project founders with a range of instruments, or basic quality signals, such as providing a pitch video and posting updates on the project during the funding phase (Cordova et al., 2015; Mollick, 2014). In view of the signalling theory, these basic instruments signal the preparedness of project founders (Mollick, 2014). Although these signals can be separated and assessed individually, the signals interfere with each other, and the potential supporters do not interpret signals individually but interpret the whole portfolio of signals they perceive (Courtney et al., 2017). In consideration of the central role of the funding goal, the aim of this study is to assess how the funding goal of a project, considered a core signal, interferes with other basic signals of a crowdfunding project, which may ultimately alter the crowd's perception of the overall signal portfolio. The interpretation of the signal portfolio thereby leads to the decision whether to support a project or not and thus is of fundamental importance to crowdfunding project founders.

1.2 Success factors for reward-based crowdfunding projects

With a seminal article on the dynamics of crowdfunding, Mollick (2014) was one of the early scholars in the field of crowdfunding research to empirically investigate this rather new way of financing new ideas. Several thousand articles, conference papers and scholarly investigations followed subsequently. Thereby, many studies that investigate the determinants of crowdfunding success include factors established by previous research as control variables. These factors primarily relate to the instruments the crowdfunding platforms, such as Kickstarter, provide to the project founders. The major instruments with an impact on crowdfunding performance that have been assessed are the inclusion of pictures and videos on a crowdfunding website (Koch & Siering, 2015), the number of posted updates and comments (Beier & Wagner, 2015; Kuppuswamy & Bayus, 2017), the number of founders of a crowdfunding project (Beier & Wagner, 2015), the offered rewards (Du et al., 2019; Zhang & Chen, 2019b), and the availability of social media (Datta et al., 2018; Thies et al., 2014). Moreover, the way how a crowdfunding project is described, for instance, in terms of the number of words used, the use of positive and optimistic language, or a description that attempts to create trust in the project founders, is positively related to crowdfunding success (Anglin, Short et al., 2018; Gafni et al., 2019; Isaak & Selasinsky, 2020; Mitra & Gilbert, 2014; Yuan et al., 2016; Zhou et al., 2018).

These factors are the first signals a potential supporter perceives when viewing a crowdfunding campaign. Although these factors are well-researched, there is no established consensus on their effect on crowdfunding performance. Some studies, for example, find that pictures, videos or updates are not relevant for project success (Cordova et al., 2015; Joenssen et al., 2014), and even the effect of social media is not yet fully understood, and the positive effect on project success is not consistent across studies (Belleflamme et al., 2013; Koch & Siering, 2015). We argue that this disparity may, to some extent, result from assessing crowdfunding projects without accounting for the individual funding goal levels. Previous studies often included the funding goal as an independent variable in regression analyses to assess the impact of different funding levels on success. Cordova et al. (2015) and Kuppuswamy and Bayus (2017) even considered different levels of funding goals in their

analyses but did not further elaborate differences or assess significance levels with respect to individual success factors for projects with varying funding goals.

Despite the often identified negative impact of a high funding goal on project success (Cordova et al., 2015; Frydrych et al., 2014; Koch & Siering, 2015), the funding goal, however, may also have a positive impact on project success. Given the information asymmetries about the true characteristics of a crowdfunding project between project founders and the crowd (Courtney et al., 2017; Steigenberger & Wilhelm, 2018; Vismara, 2018), the project goal itself can act as a signal. As Chakraborty and Swinney (2020) and Devaraj and Patel (2016) argue, a higher funding goal may signal confidence of the project founders and the high quality of the crowdfunding project. In contrast, Frydrych et al. (2014) argue that a high funding goal can decrease the legitimacy of the project if the project founders do not provide a convincing justification for the set funding goal. Therefore, depending on the funding goal, other success factors such as providing more updates on the progress of the project or describing the project in more detail could justify a higher funding goal. Relating to Frydrych et al. (2014), these factors can contribute to create the required transparency for higher funding goals. The funding goal thus acts as a strong signal with implications on the effect of other factors on project success. In other words, factors with an impact on project success may become more or less relevant with an increasing or decreasing level of the funding goal. Based on this line of argument, we state H1 as follows:

> **H1:** *The level of the funding goal of crowdfunding projects moderates the impact of success factors on crowdfunding success.*

A further aspect of crowdfunding performance to be considered is the total amount of backers who support a given project (Devaraj & Patel, 2016). Attracting a sufficiently large crowd can be crucial for any project, regardless of the funding goal in the first place. Stanko and Henard (2017) find that attracting more backers during a crowdfunding campaign is positively related to subsequent market performance, such that the number of backers plays a crucial role for the crowdfunding project after the funding phase ended. Zvilichovsky et al. (2018) find that a major motivation for backers to support a project is the perception that an individual contribution matter for the project and helps to 'make-the-product-happen'. With an increasing funding goal, the total value of an individual contribution, however, diminishes, such that the individual motivation for backers to pledge money may be reduced. Apart from that, another motivation for backers to support a project is the possibility to become part of and engage in a community around a crowdfunding project (Colistra & Duvall, 2017; Gerber & Hui, 2013). As the funding goal increases, more backers have to be attracted in order for a project to become successful and attracting more backers, thereby positively relates to the success probability (Cordova et al., 2015). Therefore, an increasing funding goal may also positively impact the success probability in terms of offering potential supporters access to a community of existing supporters, which can be expected to be larger for higher funding goals.

These considerations illustrate a conflicting effect of the funding goal on attracting project supporters. In this context, Cordova et al. (2015) find that when separating projects with small and high funding goals, the number of backers and the average contribution per backer are only relevant when pooling all projects together but become insignificant for project success when only projects with a high funding goal are considered. Therefore, we can assume that the funding goal also moderates the impact of success factors on attracting project

supporters, and this study seeks to shed light on the conflicting arguments related to the funding goal level and project success. We investigate whether the impact of success factors on attracting project supporters is also moderated by the level of the funding, and we state H2 as follows:

> **H2:** *The level of the funding goal of crowdfunding projects moderates the impact of success factors on attracting backers for a project.*

We want to highlight that both stated hypotheses are non-directional as we examine a complete portfolio of success factors. Rather, we apply an exploratory approach to investigate the potential moderation effect of the funding goal on the relationship between different success factors and crowdfunding performance and point out individual moderation patterns in the results.

2 Data and methodology

This study uses hand-collected data from 338 randomly selected crowdfunding projects on the German crowdfunding platform StartNext. StartNext offers the fixed crowdfunding principle of 'all-or-nothing', such that the project founders have to return the raised pledges in case the project fails (Bi et al., 2019). Success factors in this study comprise the instruments that are provided by most crowdfunding platforms to design the crowdfunding campaign, which can be determined or influenced during a crowdfunding campaign directly by the project founders. These instruments include the number of updates and comments, the availability of social media (Facebook and Twitter), availability of pictures and videos, the number of offered rewards to backers, the length of the project description and the number of project founders.

The potential moderating effect of different funding goal levels for success factors on crowdfunding performance was tested for the probability of success, the degree of success and the backers per project. We employ regression analyses, including robust logit- and linear OLS-regression and separate four levels of funding goals. Table 1 explains the variables used in this study. The assessed projects were assigned to four categories determined by three different funding goal thresholds: The 25%-percentile of the funding goal in our dataset at 4000€, the 50%-percentile at around 7000€, and the 75%-percentile at 15,000€. A regression without separating projects with respect to goal levels was executed to compare our results for the different goal levels to the overall dataset.

In an earlier version of this study (Pinkow & Emmerich, 2020), we also tested for the average contribution per backer as the dependent variable, but the regression results were largely insignificant, and we did not further pursue to conduct additional regression analyses on this variable. However, in this paper, we advance our initial study and further apply statistical tests for independence by using the median values of variables that indicated that the funding goal, in fact, may have a moderating effect on project success. Hereby, we again include the average contribution per backer in relation to the total number of backers per project in the tests for independence. In particular, we conduct Fisher's exact test for independence, with project success and the funding goal category as the two dichotomous attributes. The variables tested in Fisher's exact tests for independence are the number of updates, the number of comments, the number of backers, the average contribution per backer, the level of detail in the project description in terms of the number of words used, and lastly the number of rewards.

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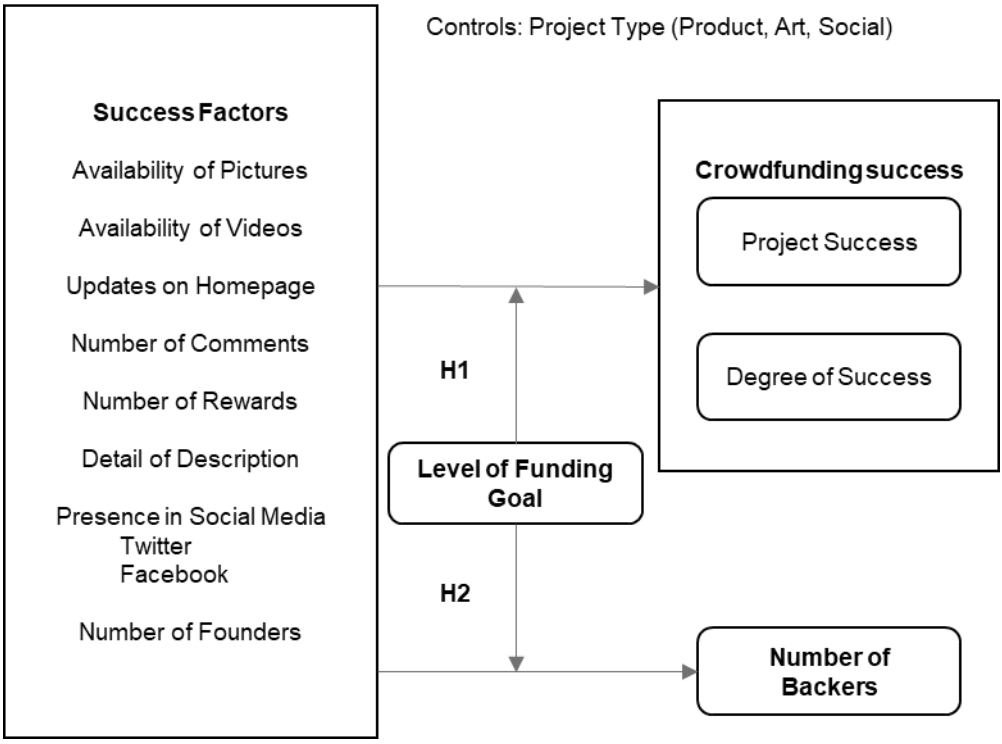
Table 1 | Variable description

Variable Name	Variable Description
Cat1	Category 1: Product-related projects, includes following subcategories: Design, Invention, Technology, Science
Cat2	Category 2: Artistical Projects, includes the following subcategories: Film, Photography, Journalism, Art, Literature, Fashion, Music, Theatre
Cat3	Category 3: Social projects, includes the following subcategories: Education, Community, Event, Social Business, Environment
PIC	Availability of Picture(s) (1=yes, 0=no)
VID	Availability of Video(s) (1=yes, 0=no)
Upd	Number of updates on the crowdfunding page
Cmt	Number of comments on the crowdfunding page
Rewards	Number of rewards offered to backers on the crowdfunding page
Detail	Number of words used to describe the project, indicating the level of how detailed the project is described *(Note: The number of words is divided by 100 in the regression tables for illustration)*
Goal	Targeted funding goal in €
Success	Project success (1=yes, 0=no)
Raised	Amount of total funds raised in €
DegrSucc	Degree of success = Raised / Goal
Backers	Number of backers of a crowdfunding project
AvrgContr	Average contribution per backer in €
FB	Availability of a dedicated Facebook page for the project (1=yes, 0=no)
TW	Availability of a dedicated Twitter profile for the project (1=yes, 0=no)
Founders	Number of founders of the crowdfunding project as stated on the crowdfunding page

Source: authors

The project categories were included as a control, as indicated in Table 1. All conducted regressions were robust to control for extreme outliers; thereby, for testing H1, we used a robust logit-regression using the dependent variable *success* and a robust linear OLS regression for the dependent variable *Degree of Success.* For assessing H2, a robust liner OLS regression was used to investigate the impact of success factors on the dependent variable *Backers*, as illustrated in Figure 1.

Figure 1 | The research design to examine moderating effects of the funding goal



Source: authors

3 Results

From the 338 examined projects, 51.78% were successful with an average funding goal of 13,364.53€, and an average of 7,999.16€ raised per project. Each project posted around five updates had around 11 comments on their crowdfunding page, offered an average of 11 different rewards to the crowd and was supported by 102 backers. 82.54% of all projects integrated at least one social media platform on their crowdfunding page, 85.80% provided at least one picture and 97.34% provided at least one video. Table 2 provides the summary statistics for the investigated projects, and Table 3 provides the pair-wise correlations.

Since only eight projects neither had a video nor any pictures, we excluded videos and pictures from the subsequent analyses. The availability of videos and pictures rather seems to have established as the basic standard for a vast majority of projects and, in our case, cannot be used to explain crowdfunding success. The regression results are summarised in Tables 4 to 6, whereby the first project category (Cat1) is omitted due to collinearity and serves as the reference group for the two other project categories.

In the following, the results are presented in this section with the aim to investigate the funding goal as a cause for varying impacts of success factors on crowdfunding performance. That

is, we investigate the expected moderating role of the funding goal according to the pre-specified hypotheses. We acknowledge the recent debate on whether using p-values is a valid approach to examine the collected data (Wasserstein et al., 2019)[1]. For the purpose of this study, we argue that assessing both p-values and effect sizes between different regression models provides valuable information. The combination of assessing p-values and effect sizes across different regression models that are subject to the exact same predictors but only differ by the level of the funding goal allows determining changes that might be linked to changing funding goal levels. In particular, if we assume that there is no moderating effect of the funding goal, then p-values and effect sizes should not change considerably between the different regression models. Contrarily, if we observe changes in p-values while effect sizes remain on a relatively stable level between different regression models with equal predictors, this indicates that the effect sizes are subject to higher variation contingent on the level of the funding goal. An inferential analysis based on the integration of our findings and the existing crowdfunding literature follows in the discussion.

Table 2 | Summary statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Success	338	0.52	0.50	0	1
DegrSucc	338	0.76	0.89	0	9.68
Goal	338	13,364.53	23,652.52	100	280,000
Cat1	338	0.30	0.46	0	1
Cat2	338	0.41	0.49	0	1
Cat3	338	0.30	0.46	0	1
PIC	338	0.86	0.35	0	1
VID	338	0.97	0.16	0	1
Upd	338	4.98	5.35	0	36
Cmt	338	10.54	15.80	0	109
Keywords	338	4.63	0.91	0	5
Reward	338	11.38	7.69	0	101
Detail	338	555.65	280.63	79	1,426
AvrgContr	338	89.14	141.04	0	1,918.25
Raised	338	7,999.16	20,320.32	0	321,226
DegrSucc	338	0.76	0.89	0	9.68
Backers	338	101.9112	189.73	0	1,902
FB	338	0.772189	0.42	0	1
TW	338	0.284024	0.45	0	1
Founders	338	2.467456	2.38	1	21

Source: authors

[1] *We would like to thank an anonymous reviewer for this valuable suggestion.*

Table 3 | Correlation matrix

	Success	DegrSucc	Goal	Cat1	Cat2	Cat3	PIC	VID	Upd	Cmt	Rewards	Detail	Backers	FB	TW	Founders
Success	1															
DegrSucc	0.68*	1														
Goal	-0.10	-0.10	1													
Cat1	-0.02	-0.05	0.11	1												
Cat2	-0.06	-0.05	-0.05	-0.54*	1											
Cat3	0.09	0.11	-0.05	-0.42*	-0.54*	1										
PIC	0.18*	0.16*	0.01	0.06	-0.10	0.04	1									
VID	0.13	0.10	0.01	-0.05	-0.01	0.07	0.35*	1								
Upd	0.49*	0.35*	0.22*	0.05	-0.08	0.03	0.20*	0.09	1							
Cmt	0.39*	0.36*	0.13	0.08	-0.09	0.02	0.10	0.08	0.46*	1						
Rewards	0.24*	0.17*	0.13	-0.13	0.1	0.01	0.15*	0.03	0.31*	0.26*	1					
Detail	0.20*	0.16*	0.15*	0.05	-0.12	0.06	0.12	-0.04	0.32*	0.20*	0.15*	1				
Backers	0.43*	0.43*	0.39*	-0.15*	0.12	0.02	0.14	0.07	0.50*	0.58*	0.31*	0.22*	1			
FB	0.27*	0.21*	0.05	-0.06	-0.03	0.09	0.22*	0.13	0.20*	0.10	0.15*	0.20*	0.17*	1		
TW	0.27*	0.26*	0.07	-0.03	-0.01	0.05	0.01	-0.06	0.30*	0.24*	0.09	0.18*	0.23*	0.22*	1	
Founders	0.29*	0.24*	0.04	-0.08	0.02	0.06	0.17*	0.06	0.19*	0.16*	0.14*	0.29*	0.27*	0.14*	0.16*	1

Note: * indicates a p-value < 0.01

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Table 4 | Robust logit regression results for project success

Dep. Variable Degree of Success	< 4000 € (1)	4000 – 7000 € (2)	7000 – 15000 € (3)	> 15000 € (4)	All Data (5)
Cat2	-2.105**	-0.319	1.144	1.998**	0.142
	(-0.42)	(-0.36)	(1.53)	(2.20)	(0.42)
Cat3	0.768	0.149	1.607**	1.626*	0.449
	(0.42)	(0.15)	(1.96)	(1.87)	(1.18)
Upd	0.623***	0.162	0.209**	0.191***	0.207***
	(3.49)	(1.20)	(2.14)	(3.46)	(4.11)
Cmt	0.135	0.123**	0.128**	0.0809***	0.0615***
	(1.35)	(2.09)	(2.41)	(2.88)	(3.39)
Rewards	0.260***	0.181*	0.0236	-0.0292	0.0133
	(2.74)	(1.67)	(0.89)	(-0.76)	(0.71)
Detail	0.134	0.00627	0.141	-0.0868	-0.0409
	(-0.65)	(0.03)	(1.24)	(-0.69)	(-0.74)
FB	0.496	1.134	1.356	0.633	1.017***
	(0.51)	(1.59)	(1.33)	(0.63)	(2.75)
TW	1.304	0.558	0.923	0.0807	0.521
	(1.40)	(0.73)	(1.20)	(0.09)	(1.55)
Founders	0.207	0.428**	0.270**	0.241	0.216***
	(1.40)	(2.32)	(2.28)	(1.40)	(3.35)
Constant	-3.472***	-5.098***	-6.332***	-4.048***	-2.876***
	(-2.60)	(-4.64)	(-3.98)	(-3.04)	(-5.96)
N	82	73	92	91	338
R-sq.	0.533	0.439	0.456	0.484	0.321

Notes: t statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.01
Source: authors

Table 4 illustrates the regression results for the distinction of successful and unsuccessful projects. Considering the project categories, artistical and social projects appear to be more successful than product-related projects for the highest level of funding goals above 15,000€, and artistical projects less likely to be successful for projects below 4,000€. The results indicate that both factors the number of updates and comments, are positively contributing to project success in the overall model (5). Considering the regression models separated by different funding goals, the number of updates display an unclear pattern with low p-values and the largest effect size for projects below 4,000€ and above 7,000€, but a high p-value and the smallest estimated effect size for projects between 4,000€ and 7,000€. The significance levels, as indicated by the p-values of the number of comments increase with a higher funding goal. However, the effect size is the largest for projects with a funding goal below 4,000€ and the lowest for projects above 15,000€. This finding suggests that the impact of the number of comments on project success is subject to a higher standard deviation for projects with lower funding goals, whereby the standard deviation gets smaller and thus the effect of a number of updates varies less for projects with an increasing funding goal. Both variables indicate that keeping the crowd informed about the project by updates and interacting with the crowd through the comment section on a crowdfunding platform is central to project success, but results vary for different funding goals, and the effect sizes seem to

decrease with an increasing funding goal. The number of offered rewards does not seem to impact project success in the overall model (5). However, the effect size of 0.26 and the corresponding p-value for the projects below 4,000€ suggest that the number of rewards plays a bigger role when only considering projects with funding goals below 4,000€. Offering a variety of rewards thus might influence project success for projects with a low funding goal but seems to become less relevant with an increasing funding goal.

Both social media and the number of founders indicate access to a larger network around the crowdfunding projects. Considering the p-values, a dedicated Facebook project page is suggested to be relevant for project success in the overall model (5), but not significant for any of the models for the different funding goal ranges. The results for the number of founders are, in turn, indicating a positive impact in the overall model and for projects between 4,000€ and 15,000€, whereby in particular projects between 4,000€ - 7,000€ seem to benefit the most from the number of members in the founding team, as indicated by the almost doubled effect size of 0.428 compared to 0.216 in the model (5). A higher number of founders can be understood as access to a larger personal network, offering to promote the project to a larger audience. Thus, projects with a low funding goal may not depend on a very large network or might not require a broad Social Media promotion. In contrast, the number of founders is relevant with an increase of the funding goal, such that a broader network may contribute to a project's success. For projects with relatively high funding goals, the pure number of founders may not be sufficient anymore to explain the network effect on project success.

The results for regression analysis on the degree of success are illustrated in Table 5. While the project categories for the previous logit-regression revealed several statistically significant differences for projects, the results for the linear regression on the degree of success indicate statistically significant differences only for projects between 7,000€ and 15,000€. For the number of comments and updates a comparable pattern as shown in Table 4 could be observed: While both factors appear to be relevant for the overall model, it is not the case for the number of updates nor the number of comments for projects in the lowest funding goal range. However, as the funding goal increases, both factors become exhibit a p-value below 0.01, indicating a statistical moderation effect of the funding goal.

Concerning the social media factors, the availability of both a Facebook project page and a dedicated Twitter profile indicates a positive impact on project success in the overall model (5). However, when separating the projects into the funding goal categories, both the statistical significance and the magnitude of the effect sizes decrease with an increasing funding. The pattern for the number of founders is comparable to the results from Table 4, with the exception that this factor also remains statistically significant for projects above 15,000€. Since a logit regression only separates between successful and unsuccessful projects, the information on the individual degree of success is lost. Thus the underlying distributions of the included variables differ between the two regression approaches and differences in p-values could be due to these distribution differences. The patterns of the observed effect sizes, however, point out a similar moderating effect of the funding goal. A common result is that some clear patterns are observable for both regression approaches, indicating strong support for the claim of this study that different funding goals determine the impact of the investigated factors on success probability and thus H1 is supported.

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Table 5 | Robust linear regression results for degree of success

Dep. Variable Degree of Success	< 4000 € (1)	4000 – 7000 € (2)	7000 – 15000 € (3)	> 15000 € (4)	All Data (5)
Cat2	-0.284	-0.0605	0.346**	0.183	0.0555
	(1.42)	(-0.36)	(2.59)	(1.62)	(0.75)
Cat3	0.419	-0.129	0.321**	0.107	0.182
	(0.88)	(-0.73)	(2.57)	(0.98)	(1.43)
Upd	0.0528	0.00166	0.0258*	0.0242***	0.0284**
	(0.97)	(0.08)	(1.68)	(2.92)	(2.54)
Cmt	0.028	0.0357***	0.0242***	0.0125***	0.0124***
	(0.83)	(2.94)	(3.80)	(5.15)	(2.96)
Rewards	0.041	0.0276*	0.00182	-0.000156	0.00155
	(0.84)	(1.68)	(0.61)	(-0.03)	(0.33)
Detail	-0.0361	-0.00465	0.0339*	-0.0100	-0.00722
	(-1.05)	(-0.13)	(1.72)	(-0.51)	(-0.49)
FB	0.341*	0.242*	0.185	0.0885	0.233***
	(1.96)	(1.85)	(1.43)	(0.74)	(3.61)
TW	0.398	0.0997	0.0821	0.0584	0.224*
	(1.49)	(0.63)	(0.65)	(0.44)	(1.69)
Founders	-0.00236	0.149***	0.0426**	0.0622**	0.0524***
	(-0.06)	(3.99)	(2.27)	(2.18)	(3.34)
Constant	0.0298	-0.259	-0.429**	-0.049	0.0631
	(0.05)	(-1.40)	(-2.56)	(-0.31)	(0.72)
N	82	73	92	91	338
R-sq.	0.2633	0.5951	0.4971	0.5949	0.2314

Notes: t statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.01
Source: authors

The regression results for the number of backers per project can be found in Table 6. While the number of updates was a highly relevant variable for the previous dependent variables on success, there is only one significance at the 10%-level for projects above 15,000€ with an effect size that can be considered relevant in practice. However, the number of comments demonstrates a much stronger effect in this case and throughout all regression models, except for the group with the lowest goals. This finding indicates that for attracting backers, a higher interaction with the crowd seems to be more relevant for attracting more supporters than posting more updates. However, comments are highly correlated with the number of backers (r=.58), and we rather assume a reciprocal effect of an increasing number of backers that leads to an increase in comments, rather than the fact that a high number of comments leads to the attraction of more backers in the first place. Nonetheless, for projects below 7,000€ the number of comments is not or only slightly relevant, which indicates that the interaction of backers with the founding team through comments gets more significant for projects with higher funding goal levels, partially supporting the claim of H2. Concerning social media integration, no strong effect could be found for the average number of backers per project.

However, the number of founders reveals an interesting pattern: For projects above the 7,000€ funding goal threshold, the number of founders seems to lose a clear influence on attracting backers. In model (1), one additional founder leads to approximately six additional backers, with a rather low deviation as indicated by the p-value. Furthermore, while in the model (2) each additional founder already accounts for 27 additional backers on average, model (3) and (4) indicate decreasing effect sizes and as indicated by the non-statistical significance exhibit a much greater variation, further supporting the claim of a moderating role of funding goal levels and supporting H2. This finding strengthens the idea that projects with a rather high funding goal do not explicitly benefit from a larger founding team, indicating that at some point the personal network of founders may become less relevant and other factors become more important for attracting more backers. Projects with lower funding goals may benefit more from close friends or family members supporting a project, but the higher the funding goal, the more backers outside the founders' networks might have to be attracted.

Table 6 | Robust linear regression results for backers

Dep. Variable Number of Backers	**< 4000 € (1)**	**4000 – 7000 € (2)**	**7000 – 15000 € (3)**	**> 15000 € (4)**	**All Data (5)**
Cat2	1.549	19.19	127.0***	145.7***	89.93***
	(0.13)	(0.79)	(3.36)	(2.65)	(4.27)
Cat3	5.852	-17.96	81.01***	70.00*	49.41***
	(0.32)	(-0.73)	(3.34)	(1.83)	(3.44)
Upd	2.079	-6.311	0.444	17.95*	9.175
	(1.30)	(-1.57)	(0.17)	(1.77)	(1.51)
Cmt	1.544	5.690*	6.065***	3.884**	5.148***
	(1.06)	(1.83)	(3.29)	(2.10)	(4.86)
Rewards	1.605	0.409	-0.248	5.185	1.560
	(0.87)	(0.16)	(-0.41)	(1.43)	(1.01)
Detail	-1.782	1.193	10.91**	-3.517	1.425
	(-1.23)	(0.16)	(2.06)	(-0.34)	(0.42)
FB	14.48	37.68*	-5.280	-12.14	17.30
	(1.63)	(1.68)	(-0.21)	(-0.27)	(1.18)
TW	8.612	73.54*	9.039	25.06-	5.497
	(0.91)	(1.94)	(0.39)	(0.48)	(0.32)
Founders	5.579***	27.38***	6.253	5.100	9.011***
	(2.68)	(2.67)	(1.25)	(0.54)	(2.77)
Constant	-10.61	-68.07**	-124.9**	-126.8	-112.0***
	(-0.46)	(-2.02)	(-2.57)	(-1.45)	(-3.73)
N	82	73	92	91	338
R-sq.	0.2853	0.5263	0.4976	0.5829	0.4966

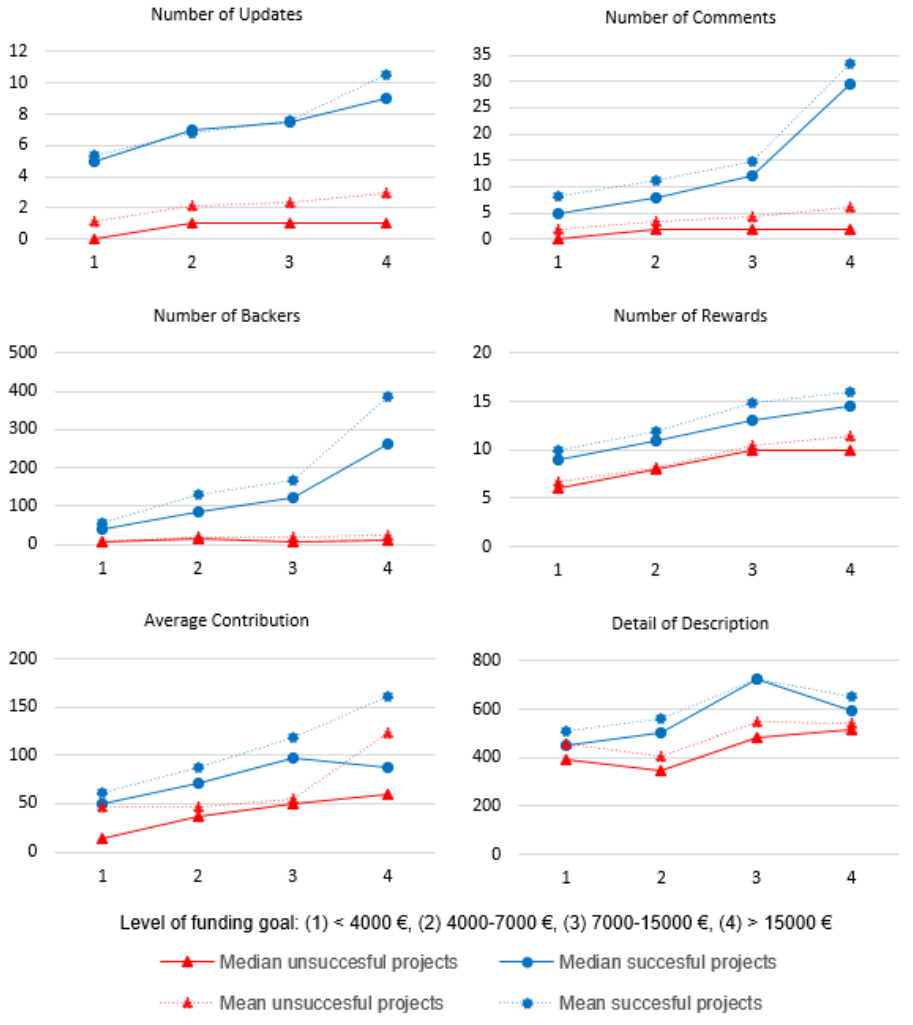
Notes: t statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.01
Source: authors

The number of offered rewards and the number of words used for a project description do not appear to clearly contribute to the total number of backers in almost all regression models in Tables 4-6, and are thus not considered useful instruments that impact crowdfunding performance in our examined crowdfunding projects. Since we only assessed the total

number of rewards and not the nature, attractiveness or price levels of rewards, we can merely state that increasing the number of offered rewards does not increase success probability substantially nor attract more backers for the assessed projects. Following this logic, the same holds true for the length of project descriptions, which we only assessed by the number of words used. A more detailed assessment of rewards and specific components of a project description could potentially yield different results.

Comparing the two assessed social media networks Facebook and Twitter, Facebook played a slightly more relevant role than Twitter. Although both social media platforms and the number of project founders are indications for the accessible network size of a project, the number of project founders was shown to have a stronger impact on crowdfunding performance in almost all regression models.

Figure 2 | Comparison of successful and unsuccessful crowdfunding projects



Source: authors

Figure 2 compares the development of mean and median values for our investigated variables for increasing levels of funding goals for successful and unsuccessful crowdfunding projects. For the number of updates, comments, backers and rewards, the means and medians increase with the level of funding goal for the successful projects. In contrast, the means and medians for unsuccessful projects show little to no development with an increase in the funding goal level. The detail of description is decreasing with the highest level of funding goal tested in our study, and for the successful projects, the median average contribution for backers strongly deviates below the mean of successful projects for the highest levels of the funding goal, indicating that a smaller amount of contributors with rather large investments are contributing to the overall success of crowdfunding projects with high funding goal levels.

Complementing the results of the regression analyses, Figure 2 provides additional evidence that the funding goal is a central determinant of crowdfunding performance. While the regression results showed varying effect sizes across the four categories of funding goal levels, the comparison of mean and median values for the selected variables further illustrates that not only the effect sizes change with a varying funding goal, but that also the individual values of potential success factors themselves are contingent on the level of the funding goal. These observations support the claims made in the pre-specified hypotheses H1 and H2, addressing the funding goal as a possible cause for a different impact of success factors on crowdfunding performance. In other words, the findings indicate that the funding goal can be a moderator in the relationship between success factors and crowdfunding performance.

4 Discussion

This study investigated the funding goal as a central determinant for reward-based crowdfunding success, assessing whether the funding goal moderates the relationship between other success factors and crowdfunding performance. We found that the interaction with the crowd through posting updates and encourage an active comment section becomes more important with an increasing funding goal. Other factors, like providing pictures or videos, were found to be significant success factors by previous research (Mollick, 2014). However, our findings indicate that pictures and videos became rather basic requirements for a crowdfunding project and cannot help to explain success. The factors assessed in this study can be understood as instruments influenced by project founders directly on the websites of their projects on crowdfunding platforms. Thus, our results contribute important information for nascent entrepreneurs who choose to run a crowdfunding campaign to finance their idea: the relevance of individual factors must be considered differently depending on the required funding. The decision of which instruments are relevant to be successful is significantly moderated by the chosen funding goal. Hence, project founders are encouraged to carefully think about the interplay of different funding goals and the effect of the employed instruments. Another factor tested was the number of founders themselves, where higher numbers of founders are significant for the success of smaller projects but not for projects with large funding goals. This could indicate that the resources and commitment of individual project founders are important but become less relevant with higher levels of funding goals. Here the resources and workforce provided by individual founders might diminish under the overall scope of bigger and subsequently, more expensive projects.

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4.1 Implications

Established literature has already investigated the relevance of updates within the funding cycle of crowdfunding projects, which seem to be more present during the early stages and once the project nears the goal (Kuppuswamy & Bayus, 2018). We contribute an overview of measures such as the presence of social media, rewards and updates on the project that have proven significant for the success depending on the targeted funding goal. Our study highlights the moderating effect of the targeted funding goal for research of crowdfunding projects. Our findings support that project-related updates are particularly important for the crowdfunding success of projects with larger funding goals. For the number of comments on the project platform, our results further suggest that an active community is another important factor for larger crowdfunding projects. The presence in social media and rewards as an incentive for contributors seem to be more important for smaller projects and become less relevant with increasing levels of funding goals. Based on our findings, we suggest managers of smaller crowdfunding projects particularly pay attention to their social media and implement rewards as an incentive to contribute to the crowdfunding project. Managers of projects with higher funding goal levels should focus on the facilitation of an active crowdfunding community in a way they can interact with the project and provide updates on a frequent basis.

A further implication addresses the use of social media. We found that the availability of social media can positively impact crowdfunding performance for projects with lower funding goals but becomes less relevant with an increase of the targeted funding goal. Thereby, we complement the findings of Beier and Wagner (2015), who find that a simple application of social media is not beneficial for project success. We argue that small projects may indeed increase their success probability by simply linking social media accounts to the crowdfunding project. However, in particular, for projects with higher funding goals, this simple instrument is no more sufficient. Hereby, we contribute to research investigating the effect of social media on crowdfunding success. As such, Clauss et al. (2020) find that also the reach of social media accounts should be taken into account by considering the number of social media accounts promoting a project, and Mollick (2014) finds that the number of Facebook friends is significant for explaining project success. Based on our findings, we recommend future research to investigate the particular utilisation of social media and potentially identify funding goal thresholds which allow identifying measures that be taken to increase the success probability if project founders decide on a higher level of the funding goal.

Our findings generally add to recent studies in crowdfunding research that increasingly incorporate moderating factors in quantitative analyses (e.g. Chan et al., 2020; Liang et al., 2020; Z. Wang & Yang, 2019). For instance, Chan et al. (2020) find that prior funding has an effect on subsequent funding decisions by potential supporters. This relationship is moderated in a U-shape style by bounding conditions such as the pitch video quality, the displayed preparedness and passion of project founders, and the overall funding need. In particular, our findings complement and investigate the overall funding need in more detail, as we enhance this moderating effect by illustrating which individual success factors contribute to this moderating effect.

4.2 Limitations and avenues for future research

Despite the exploitation of a large and diverse data set of crowdfunding projects, this study has notable limitations. We only considered the number of updates and comments. Research dedicated to more in-depth analyses, for instance, N. Wang et al. (2018), suggests that also the content in terms of sentiment and length of comments impacts project success. This is also determined by the project founders themselves and can be considered another instrument they can use when running a crowdfunding campaign. Furthermore, this study is limited to objectively assessable instruments. However, previous researchers also identified that more subjective signals are relevant for project success. As such, a narrative that frames a project as a 'dream' of the project founders (Ahrens et al., 2019; Allison et al., 2017), project founders who display narcissism (Anglin, Wolfe et al., 2018) or entrepreneurial passion (Davis et al., 2017), or the perceived authenticity of the project founders (Radoynovska & King, 2019) have been found to impact project success. Hence, we suggest considering these findings when assessing the moderation effects of the funding goal. We recommend evaluating whether a rather small project with a low funding goal requires project founders to display entrepreneurial passion or communicate the project as a 'dream' and if this is perceived credible by the crowd.

Furthermore, our finding that a smaller number of contributors with rather large investments are contributing to the overall success of crowdfunding projects with larger funding goals raises the question of how to attract these backers that are willing to invest rather large amounts of money. Subsequently, we suggest future research to further investigate the crowd backing a project, answering *who* is the crowd and 'which' crowd must be attracted. This question has already been approached by a few previous studies (Inbar & Barzilay, 2014; Steigenberger, 2017; Zhang & Chen, 2019a). However, a fine-grained quantitative analysis of the individuals backing crowdfunding projects considering the funding goal a moderating determinant for project success remains desired.

Another interesting avenue for future research is to investigate the signal strength and quality of different measures which are presented in this study. For instance, the quality and specific content of the provided videos or posted updates (e.g. Kuppuswamy & Bayus, 2017) should be considered, as our study is limited to the extent that only the availability and the absolute number of updates were recorded. In addition, as indicated by Kim et al. (2016), the content of the project description may discourage potential funders if the project goal is not communicated clearly, but can encourage funders by illustrating how a project idea is distinct from potential alternatives. However, the question remains whether these signals are equally important for all crowdfunding projects. In fact, we can expect that, in particular, for projects with higher funding goals, clear signals are becoming more important. We suggest that future research should investigate whether specific signals require an increase in signal strength and quality with an increase in the funding goal.

Lastly, we especially emphasise the need to develop an approach to assess *newness* or *innovativeness* of projects, since only a few studies consider the nature in terms of creativity or newness of individual projects (Davis et al., 2017; Zhang & Chen, 2019a). A more detailed investigation of the interplay of different funding goal levels and success factors could be carried out considering the quality, innovativeness, and specific type of project.

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Conclusion

When setting up a crowdfunding campaign, a central decision to be taken by the founding team is which amount of funding should be targeted. The funding goal has been found to play a central role in this study for understanding which factors lead to the success of a crowdfunding project. First and foremost, since an increasing funding goal was identified by prior research to decrease the chance to succeed, project founders are encouraged to carefully set the funding goal in order to not too strongly decrease the success probability of their projects. The goal of this study was to investigate the impact of the different levels of the funding goals on the relationship between other success factors and crowdfunding performance.

Based on our findings, we claim that the level of the funding goal indeed plays a moderating role and thus recommend that future project founders acknowledge that setting a funding goal has not only a direct impact on crowdfunding performance but also an indirect impact. In particular, the effect of individual instruments available to project founders depends on the level of the funding goal. In particular, concerning the probability of projects success, our results indicate a trend that individual success factors contribute less to the success probability for projects with an increasing funding goal. Therefore, project founders are required to exert more effort in terms of providing updates or rewards and the need to attract a higher number of backers if they aim to set a high funding goal. We argue that more research is required to clearly understand the specific central role of the funding for crowdfunding performance. Our study provides first indications in this direction and thereby contributes to the general understanding of the characteristics of the innovative financing alternative that rearranged the venture capital environment – reward-based crowdfunding.

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